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MTA Investigating Automation Technologies for Metro Rapids

By DAVE SOTERO

(Feb. 4, 2004) Imagine riding a Metro Rapid bus that drives itself along a special lane of traffic while the bus operator monitors the high-tech control system and keeps an eye out for safety.

A magnetic guidance system installed on the bus and embedded in the road precisely steers it, allowing the bus to keep a constant, safe distance from other buses in the same lane.

The system automatically controls the bus's rate of speed and lane changes, and maneuvers the road nimbly until it reaches its destination. Once there, the bus docks at a platform, allowing those in wheelchairs to easily disembark.

All that's possible with electronic guidance systems now being developed by the California Partners for Advanced Transit and Highways (PATH), a research program from the University of California, Berkeley.

PHOTOS COURTESY OF PATH

Automated Bus Rapid Transit has been successfully demonstrated in San Diego, showing that transit vehicles can operate close together in an electronically-coupled "virtual train".

Automated buses are equipped with technology that enables the operator to easily transfer back and forth between manual and automated driving, and to initiate automated maneuvers such as lane changing on the highway and precision docking at local bus stops.

Bus Rapid Transit use

MTA is working with California PATH and others to introduce these technologies for Bus Rapid Transit applications in LA County in the coming years. Metro Rapid buses currently use sensors and transponders to coordinate with traffic signals and alert riders at bus stops of approaching buses.

Caltrans created the national PATH project to study ways to eliminate congestion on highways through an Intelligent Vehicle Highway System (IVHS).

The goal is to use existing highway capacity more effectively by "platooning" vehicles closer together, automating the driving process and designating special lanes for their operation.

Many more vehicles could operate on the same highways, essentially creating the benefits of a rail system without its capital costs and land requirements.

How the system works

Here's how the system works: Permanent magnets embedded in the center of a lane will accurately measure the position of a bus within a lane, as well as take note of upcoming roadway characteristics, including roadway curves, entrances, exits and mileposts.

Magnetic sensors mounted under the front and rear bumpers of the vehicle will measure the magnetic fields and an on-board computer will process the directional data. The computer will direct all steering control functions.

Together, these systems will allow buses to navigate roads with extreme accuracy while sustaining high operational speeds.

The technology also will help bus operators sustain higher speeds on arterial streets, but also drive on tight, narrow lanes where speeds must be reduced for safety. Operators would drive a bus under manual control while going to and from automated road sections.

"This technology and others hold promise for speeding service while not compromising safety," says Rex Gephart, MTA director of Regional Transit Planning. "We're always on the lookout for technologies like these that will help improve the transit experience for our customers."

A demonstration in San Diego showed how the technology could be used on the state's highway system. MTA, however, is interested in demonstrating how automated technologies can be used on LA County's arterial streets, where most congestion occurs.